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Problems of Perception in Extreme Situations

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Perception is that complex process whereby we transform the code of our nervous impulses into the world as we know it; the world of space, objects, sounds, colors, people and of dangers and disasters. Each of us acts in terms of the world he thus creates. Consequently, knowledge of the perceptual process should be useful in our effort to understand human behavior in disaster.

A review of the disaster literature indicates that this fact is not always fully appreciated. Disaster victims are often described as "notoriously inaccurate reporters," or as "giving completely different accounts of the same event." Then the effort is made to piece together all the "fragmentary" accounts into the story of "what actually happened." Once a composite reconstruction of events is obtained, the researcher then attempts to relate large categories of behavior found with certain frequencies in the population to the "objectively determined" series of events. This is a legitimate approach for many purposes, but from the point of view of the student of perception, the key to understanding why people act as they do is in understanding what they are reacting to. Why is one man calm and collected, while another is stunned and bewildered? Why do some people flee while others remain? Perhaps part of the answer lies in age differences, sex differences, personality differences or other such factors. But an equally good possibility is that the answer lies mostly in the individual's unique perception of the situation from his own unique point of view as it relates to his past experience, his purposes, and his experientially based estimate of his own capacities to act effectively.

A complex predictive equation is involved in any instance of behavior. Included in this equation is the person's assessment of "what is out there," and the assessment of "what is out there" depends in large degree on where the person is, what he is attending to, and his experience in decoding patterns of nervous impulses of that kind. Included also in this equation is the person's perception of himself; including among other things, his purposes, his ability to act in certain ways, and his relationships with others. Somehow these perceived attributes of "other" and "self" are brought into relationship in the perceptual process. Emerging from this relational process is a prognosis or "best bet," unique for the individual, as to the probable consequences of the total situa-

tion as perceived. If I have one suggestion to make which I feel sure would be concurred in by most students of perception, it is that more study of the factors involved in this complex relational process of perception be included in future disaster research.

Such a highly individualistic approach to human behavior does not rule out the possibility of generalization. Our perceptual research at Princeton has suggested several general principles which seem highly relevant to the problems considered in this issue of *Human Organization*. A note of caution is needed here. Our perceptual research has not been concerned specifically with disaster or other extreme situations. Consequently the principles which follow are, for the most part, extrapolated from basic laboratory research and should be regarded as hypotheses.

1) There is an initial tendency to establish a dominant percept and assimilate all happenings to it. Usually, but not always, this dominant percept is a familiar one.

This tendency emerges very clearly in a great many of the Ames perceptual illusions.¹ It can be illustrated by referring to one of the small distorted rooms. This is a room about 4' by 4' in which the floor slopes down sharply to the left, the ceiling slopes sharply up to the left, the back wall recedes from right to left and the windows are trapezoidal in shape. However when observed from the proper point with one eye the room is seen as normal; that is, with level floor and ceiling, back wall at right angles to the line of sight and the windows rectangular. Once this basic percept of normality is established all kinds of events will be assimilated to it in spite of the fact that many of them become ludicrous and logically impossible. Marbles will be perceived as rolling up hill; another person's face will be seen as radically different in size when viewed in the right window as compared to being viewed in the left window. Only after a considerable period of being exposed to such incompatible evidence does the viewer's dominant percept begin to alter, and the rate with which such alteration occurs is a highly individual matter. Some people even hang on to the dominant percept so strongly that available incompatible evidence is suppressed, and they fail to perceive it.

It was this tendency to assimilate all happenings to the familiar which was noted by the NORC investigators in

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1. William H. Ittelson, *The Ames Demonstrations in Perception*. Princeton: Princeton University Press, 1952.

several of their studies, including one of a destructive tornado. It was reported that many of the victims interpreted the roar of the approaching tornado as the sound of a train.² Assimilation to a dominant, but rather bizarre, percept was described in Cantril's analysis of the effects of *The Invasion from Mars* broadcast. Among people who attempted, by looking outdoors to check the reality of the Martian invasion, many interpreted an empty street as "everybody has fled," while others a street full of traffic was interpreted as "everybody is fleeing."³

The practical implications of this assimilative tendency for problems of disaster are many. For example, it suggests that, during an emergency, presenting just the facts or the "truth" is simply not enough. The facts must also be interpreted. Facts alone, or truth alone, are apt to be assimilated by the hearers to their dominant percept; and thus may actually facilitate the very actions which the communicator desires to prevent or modify.

2) Actions tend to be appropriate to the situation as perceived, even though they may seem illogical or inappropriate to others.

This point, too, can be demonstrated in the small distorted room. If the observer who perceives the room as normal and rectangular is given a light bamboo wand and asked to move it quickly from the upper left hand rear corner to the lower right hand rear corner of the room, he initially will be unable to do so without considerable error. The actions he performs are those appropriate to a normal room, even though he may already know intellectually the actual distorted shape of the room. Only by moving extremely slowly and carefully can he make even partial use of his intellectual knowledge at all. The actions of the wand wielder provide considerable merriment for on-lookers, because from their point of view, his behavior is illogical and inappropriate. It appears that the criteria of appropriateness are not the same for the individual involved and the outsider.

Appropriateness of action becomes even more a matter of individuality when we consider the role of purpose. For example, a responsible authority (let us say), not only has his own unique perception of the disaster from his own point of view, but he has the purpose, say, of minimizing danger to the group. To him my action may appear illogical and come under the heading of panic, not only because he does not perceive the same situation I do, but because *my* purpose may be to save my life, or some particular person's life, or to secure attention which I have always lacked, or any number of other things.

A quotation from the NORC disaster studies is much in point here. The authors say, "Our data indicate that the immediate problem in a disaster situation is neither uncontrolled behavior nor intense emotional reaction, but deficiencies of coordination and organization, complicated by

people acting upon individual (and, often conflicting) definitions of the situation. It is this aspect of disaster behavior which is frequently identified erroneously as "panic."⁴

3) Under stress there is a tendency to isolate oneself from immediate on-going events, and hold on to a familiar stable perceptual organization. Concurrent with this perceptual restriction, there is a tendency to act in familiar ways that have proved reliable in the past, even though they are no longer appropriate to the immediate occasion.

This generalization stems from a number of studies conducted by Slack and Wittreich.⁵ They induced stress-like physiological reactions through the use of amyl-nitrite and cold pressor in a great variety of perceptual and perceptual motor situations including one-dimensional tracking, induced perceptual distortion, and size constancy in the laboratory and out of doors. The unmistakable tendency in each of these cases, as well as in some studies involving psychological stress, was for the subject to isolate himself from immediate in-put and to perceive and act in terms of a stable perceptual construct or constancy which had proved reliable in the past. Feedback of evidence that the ways of perceiving and acting were inappropriate not only failed to correct this restrictive tendency, but in many instances even aggravated it. Fatal jamming of exits in a fire and much of other behavior common in extreme situations might reasonably be ascribed to these basic perceptual tendencies.

These findings suggest, among other things, that if people are to be drilled in actions to be taken during an emergency, the actions should be ones which will in no case be inappropriate. They also suggest that any tension-reducing mechanism, such as humor or expressive action will help to relieve this tendency toward perceptual restriction and inflexibility.

4) In the absence of reliable guides from past experience for perceiving or acting, suggestibility is high.

There is little point in a lengthy discussion of this generalization as it is a familiar one to students of social psychology, first clearly formulated in Cantril's *Psychology of Social Movements*.⁶ Much of our experimental work in which we systematically place perceptual cues in conflict has not only demonstrated its validity, but has added some qualifications of interest. During the period of perceptual conflict, cues which would otherwise be extraneous are often seized upon and utilized as a means of resolving the conflict, and ordinarily the conflict will not be tolerated for long if there is any means of avoiding it. As noted before, once a dominant percept and action pattern is established, there is a tendency to suppress inharmonious cues and to enhance harmonious cues. One practical implication of these findings is that if

2. Charles E. Fritz and Eli S. Marks, "The NORC Studies of Human Behavior in Disaster," *Journal of Social Issues*, 1954, Vol. 10, No. 3, pp. 26-41.

3. Hadley, Cantril, *The Invasion from Mars*. Princeton: Princeton University Press, 1957.

4. Fritz, *op. cit.*, p. 33.

5. F. P. Kilpatrick, *Final Report, Contract N6onr-27014 with Princeton University*. Princeton: Psychology Research Center, 1955 (mimeographed).

6. Hadley, Cantril, *The Psychology of Social Movements*. New York: Wiley, 1941.

suggestions in an emergency are to reach the audience when it is in a state of maximum receptivity, timing is of great importance. The suggestions must be given early in the period of perceptual conflict.

5) Prolonged subjection to conflicting perceptual cues induces emotional depression, followed by elation when the conflict is resolved.

Slack conducted a study, as yet unpublished, which is an excellent example of the perceptual research on which this generalization is based. He made a study of induced emotional reactions to the perceptual conflict involved in prolonged wearing of aniseikonic glasses which tend to produce marked distortions of whatever is being viewed. He used himself as a subject, wearing aniseikonic glasses, for one week. Results of wearing the glasses were marked emotional depression, followed by some degree of adaptation. Removal of the glasses resulted in feelings of elation so great that Slack felt that he had to put the glasses back on and gradually adapt himself to not wearing them.

The leads in such studies for understanding the emotional reactions of disaster victims are numerous. Also they suggest that, in an emergency, immediate structuring of the situation is important in avoiding psychological after effects. Perhaps this is true even if the structure which must be given to the situation is unpleasant.

6) The most effective way of accomplishing perceptual reorganization is through action by the perceiver.

Although this point emerges quite clearly from a number of our experiments and from the experiencing of a number of our perceptual demonstrations, it can be illustrated quite well by referring again to the small monocular distorted room previously described. We have found that if a naive individual is brought to such a room and observes it from the proper point of view, he can sit and look at the static configuration for an indefinite length of time without any perceptual reorganization occurring. However, it is possible for him, by other means, to learn to see the room more and more in its true distorted shape.

Such perceptual learning occurs, but only very slowly, if the individual merely sits passively and observes while events, such as the bouncing of a ball in the room or the movements of a wand, yield him clues as to the inappropriateness of his original percept. Perceptual learning occurs much more swiftly if the observer himself tosses the ball and feels around the room with the wand.

Strangely enough, advance intellectual knowledge about the true shape of the room has no helpful effect on perceptual reorganization through action. In fact, one experiment by Bagby shows that it has an initial inhibiting effect.⁷ Apparently, the clues being generated through action are initially checked against a set of abstract concepts if they are available, and only sometime later does the observer actually get down to the business of attempting to correlate them with what is actually being seen. Some later experiments of my own have indicated, however, that when the abstract information is given *after* instead of *before* some testing out through action has taken place, perceptual learning is speeded up.

The results of these experiments merely underline the importance of securing common action and common experience if people are to perceive the situation in similar ways. They also leave us with the tentative suggestion that if the period of perceptual conflict in an emergency has passed and undesirable perceptual structuring has taken place, attempts at verbally restructuring the situation for the participants should not come *before* the initiation of some common action, but should follow shortly thereafter.

The generalizations I have set forth are few in number and quite limited in scope, as they are drawn mainly from research conducted in our own laboratory at Princeton. Certainly many principles of greater significance could be obtained from a careful examination of the perceptual literature, and from incorporating more of the principles of perceptual research in the study of disaster. The immediate, critical, and practical need for knowledge concerning human behavior in emergency situations makes it most urgent that we make the best use we can of all approaches which have anything to contribute.

7. Kilpatrick, *op. cit.*